DOCUMENT RESUME

ED 395 214 CE 071 753

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TITLE	Distance Learning, the Internet, and the World Wide Web. ERIC Digest.
INSTITUTION	ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO	EDO-CE-96-168
PUB DATE	96
CONTRACT	RR93002001
NOTE	4p.
PUB TYPE	Information Analyses - ERIC Clearinghouse Products (071)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Adult Education; *Computer Mediated Communication; Computer Networks; *Computer Uses in Education; Constructivism (Learning); *Distance Education; *Internet; Lifelong Learning; Teaching Methods; Telecommunications; *World Wide Web
IDENTIFIERS	ERIC Digests

ABSTRACT

Some of the newest methods of distance learning (DL) use the Internet and the World Wide Web. DL on the Internet usually takes one of the following forms: electronic mail; bulletin boards/newsgroups; downloading of course materials or tutorials; interactive tutorials on the Web; real-time, interactive conferencing; "intranets" (internal, limited-access websites); or informatics. Advantages of delivering DL on the Internet include the following: time and place flexibility; potential to reach a global audience; no concern about compatibility of computer equipment and operating systems; quick development time; easy updating of content; and usually lower development and operating costs. Some disadvantages are limited bandwidth and slow modems that hamper delivery of sound, video, and graphics; reliance on learner initiative; information overload; access; and social isolation. Multimedia/hypermedia contexts support constructivist approaches to learning. Computer discussion also requires and facilitates learning-how-to-learn skills. Social isolation can be a drawback, but learning communities are developing in cyberspace. Online courses often feature consensus building and group projects, through which learners can develop skills in collaborating with distant colleagues and cooperating with diverse individuals--skills increasingly needed in the global workplace. To help learners make effective use of DL methods, skilled facilitation by teachers is essential. (Contains 13 references.) (YLB)

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by Sandra Kerka

EDO-CE-96-168

Distance Learning, the Internet, and the World Wide Web

In the beginning was the word—the printed word. In its earliest form, distance education meant study by correspondence, or what is now called "snail mail." As new technologies developed, distance instruction was delivered through such media as audiotape, videotape, radio and television broadcasting, and satellite transmission. Microcomputers, the Internet, and the World Wide Web are shaping the current generation of distance learning, and virtual reality, artificial intelligence, and knowledge systems may be next. Some define distance education as the use of print or electronic communications media to deliver instruction when teachers and learners are separated in place and/or time (Eastmond 1995). However, others emphasize distance *learning* over education, defining it as "getting people—and often video images of people—into the same electronic space so they can help one another learn" (Filipczak 1995, p. 111), or "a system and process that connects learners with distributed resources" (ibid., p. 113). These two definitions imply learner centeredness and control.

Typical audiences for earlier generations of distance education were adults often seeking advanced education and training at home, on the job, or in the military whose multiple responsibilities or physical circumstances prevented attendance at a traditional institution (Bates 1995). Now anyone is potentially a distance learner, a concept that has implications for the organization of educational institutions and for teaching. This *Digest* focuses on some of the newest methods of distance learning (DL) using the Internet and the Web. It highlights some of the issues that could profoundly change the delivery of adult, career, and vocational education.

Distance Learning in Cyberspace

Perhaps more than any other distance media, the Internet and the Web help overcome the barriers of time and space in teaching and learning. Educational uses of the Internet are burgeoning. The University of Wisconsin-Extension's Distance Education Clearinghouse lists numerous institutions offering online instruction <http://www.uwex.edu/disted/home.html> and corporate training is featured on AT&T's Center for Excellence in Distance Learning website <http://www.att.com/cedl/>. *Internet World*'s October 1995 issue gives examples of "The Internet in Education," including online degree programs offered by traditional institutions such as Penn State and Indiana University as well as nontraditional entities such as University Online and the Global Network Academy. DL on the Internet usually takes one of the following forms (Wulf 1996): (1) electronic mail (delivery of course materials, sending in assignments, getting/giving feedback, using a course listserv, i.e., electronic discussion group); (2) bulletin boards/newsgroups for discussion of special topics; (3) downloading of course materials or tutorials; (4) interactive tutorials on the Web; (5) real-time, interactive conferencing using MOO (Multiuser Object Oriented) systems or Internet Relay Chat; (6) "intranets," corporate websites protected from outside access that distribute training for employees; and (7) informatics, the use of online databases, library catalogs, and gopher and websites to acquire information and pursue research related to study.

Examples of the use of these modes include the following. High school students with disabilities in Project DO-IT (Disabilities, Opportunities, Internetworking, Technology) connect with the University of Washington (UW) to receive instruction via e-mail, join worldwide discussion groups, and access online resources (Burgstahler 1995). Also at UW, rehabilitation therapists learn about adaptive computer technology through videotapes and an Internet class discussion group (ibid.). The Distant Mentor project pairs workplace experts with school-to-work "apprentices" online; they can also simulate work environments through desktop software with an audio channel connected through the Internet (Dede 1996). At Carnegie-Mellon University, the Virtual Corporation simulates a work setting for business students (ibid.). A career counselor offers group and individual online conferences, a listserv, and a database of resumes and resources for clients (Sherman 1994). CUSeeMe software enables technology teacher education supervisors to observe student teachers using a desktop videoconference through the Internet ("Agricultural Education" 1996).

Advantages of delivering distance learning on the Internet include the following (Bates 1995; Eastmond 1995; Wulf 1996): (1) time and place flexibility; (2) potential to reach a global audience; (3) no concern about compatibility of computer equipment and operating systems; (4) quick development time, compared to videos and CD-ROMs; (5) easy updating of content, as well as archival capabilities; and (6) usually lower development and operating costs, compared to satellite broadcasting, for example. Carefully designed Internet courses can enhance interactivity between instructors and learners and among learners, which is a serious limitation of some DL formats. Equity is often mentioned as a benefit of online learning; the relative anonymity of computer communication has the potential to give voice to those reluctant to speak in face-to-face situations and to allow learner contributions to be judged on their own merit, unaffected by "any obvious visual cultural 'markers'" (Bates 1995, p. 209). The medium also supports self-directed learning—computer conferencing requires learner motivation, self-discipline, and responsibility.

As with any medium, there are disadvantages. At present, limited bandwidth (the capacity of the communications links) and slow modems hamper the delivery of sound, video, and graphics, although the technology is improving all the time. Reliance on learner initiative can be a drawback for those who prefer more structure. Learner success also depends on technical skills in computer operation and Internet navigation, as well as the ability to cope with technical difficulties. Information overload is also an issue; the volume of e-mail messages to read, reflect on, and respond to can be overwhelming, and the proliferation of databases and websites demands information management skills. Access to the Internet is still a problem for some rural areas and people with disabilities. Social isolation can be a drawback, and the lack of nonverbal cues can hinder communication. Although the Internet can promote active learning, some contend that, like television, it can breed passivity (Filipczak 1995). The next section takes a closer look at distance learning processes.

Distance Learning Processes

Multimedia/hypermedia contexts such as the Web support constructivist approaches to learning, which are based on the belief that individuals construct their own understanding of the world as they acquire knowledge and reflect on experiences. Dede (1996) describes how carefully designed online learning can assist the construction of knowledge by showing learners the links among pieces of information and supporting individual learning styles.

When Wiesenberg and Hutton (1995) conducted a continuing education program using computer conferencing, they found it necessitated two to three times more delivery time. Learners appreciated the convenience of asynchronous communication, but many were anxious about putting their written words "out there." The course was more democratic but less interactive than expected, and the instructors recommended giving learners a better orientation to the online learning environment, providing technical support, and fostering self-directed learning and learning-to-learn skills.

Eastmond (1995) highlights the ways that computer discussion both requires and facilitates learning-how-to-learn skills, such as locating and accessing information resources, organizing information, conducting self-assessment, and collaborating. Adult learners in his study found the following strategies critical to success in electronic learning: becoming comfortable with the technology, determining how often to go online, dealing with textual ambiguity, processing information on or off line, seeking and giving feedback, and using one's learning style to personalize the course.

The Social Nature of Distance Learning

A common stereotype is "the loneliness of the long distance learner" (Eastmond 1995, p. 46). Learning at a distance can be both isolating and highly interactive, and electronic connectedness is a different kind of interaction than what takes place in traditional classrooms; some learners are not comfortable with it. Lack of nonverbal cues can create misunderstanding, but communications protocols can be established and relationships among learners developed. Because humans are involved, social norms do develop in cyberspace, but they require new communications competencies (ibid.). Online courses often feature consensus building and group projects, through which learners can develop skills in collaborating with distant colleagues and cooperating with diverse individuals. Such skills are increasingly needed in the global workplace (Dede 1996).

Answering charges that computer learning environments cannot duplicate the community of the classroom, Cook (1995) argues that the assumption of a sense of community in traditional classrooms may be false. If community is defined as shared interests, not geographic space, electronic communities are possible. Wiesenberg and Hutton (1995) conclude that building a learning community is of critical importance to the creation of a successful virtual classroom. Dede (1996) agrees that, "to succeed, distributed learning must balance virtual and direct interaction in sustaining communion among people" (p. 199).

Strategies for Distance Learning

Filipczak (1996) notes that DL on the Internet can be cheaper, faster, and usually more efficient than other learning modes, but not necessarily more effective. As Dede (1996) puts it, "access to data does not automatically expand students' knowledge; the availability of information does not intrinsically create an internal framework of ideas" (p. 199). To help learners make effective use of distance learning methods, skilled facilitation is essential. Rohfeld and Hiemstra (1995) suggest ways to overcome the challenges of the electronic classroom: (1) establish the tone early in the course; (2) to overcome the text-based nature of online discussion and to build group rapport and cohesion, introduce participants to each other, match them with partners, and assign group projects; (3) offer training and guidelines to help learners acquire technical competence and manage discussions; (4) provide a variety of activities, such as debates, polling, reflection, and critique; and (5) use learning contracts to establish goals for participation. The following strategies are intended to make distance learning more effective (Bates 1995; Dede 1996; Eastmond 1995; Filipczak 1995):

- Understand the technology's strengths and weaknesses
- Provide technical training and orientation
- Plan for technical failures and ensure access to technical support
- Foster learning-to-learn, self-directed learning, and critical reflection skills
- Develop information management skills to assist learners in selection and critical assessment
- Mix modes—e.g., combine e-mail discussion with audio/video methods to enhance the social aspect
- Structure learner-centered activities for both independent and group work that foster interaction

In the end, the word is still with us. The way it is transmitted and received is changing. Educators can play a role in the development of a "vital form of literacy" (Dede 1996, p. 200): the transformation of information into knowledge. The choices they make can also help determine which of these possibilities come to pass: (1) distance technologies as an add-on to existing institutions; (2) "knowledge in a box," impersonal, individualized, and socially isolating; or (3) a networked learning society that keeps human relationships at the center of learning (Bates 1995).

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Developed with funding from the Office of Educational Research and Improvement, U.S. Department of Education, under Contract No. RR93002001. Opinions expressed do not necessarily reflect the position or policies of OERI or the Department. *Digests* may be freely reproduced.

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